International Journal of Advanced Information Science and Technology (IJAIST) ISSN: 2319:268
Vol.2, No.2, February 2013 DOI:10.15693/ijaist/2013.v2i2.46-52

A Study on opinion about integrating ICT with Teaching and Learning- Analyzing different branches in Deemed University Students

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Abstract*— Education is considered to be the most important factor for a student to enrich equity, tolerance and peace. Teaching and learning is considered to be an active process in which students gain knowledge. In traditional method of teaching, learning was imparted orally by sages and scholars. The information was passed from one generation to another in the form of "gurukulam" system of teaching and learning where residential schools were started in the teacher's house where education was free but students had to pay "gurudakshina" in the form of gifts. In gurukulam the teacher, taught various subjects on religion, scriptures, philosophy, literature, warfare, statecraft, medicine, astrology and history. During the British rule the system of education was classified into primary, secondary and higher secondary education .In the traditional mode of teaching, the teacher actively delivers lectures in the classroom and the students listen the lectures. After the completion of the topic/lesson, students raise queries where the teacher answers. The limitations in the traditional method are 1. There is military training and discipline 2. Students were asked to sit erect, minimizing their movements, talk only when asked. 3. No innovative ideas 4. Freedom of speech and learning is limited for students 5. Knowledge is limited between teacher and students. Academicians, Software Specialists, Researchers in the field of education worked together to integrate Information and Communication Technology with traditional methods of teaching and learning so that ICT can support pedagogy and learning. It allows the teacher to develop instructional materials to their own specifications. Students study online materials, develop knowledge by searching through ICT devices and forming a knowledge circle along with the teacher and other students, to create a knowledge society. This paper examines the traditional methods of teaching and learning, integrating ICT into traditional teaching and learning methods. At the end of ICT training, students from Deemed University situated in Kanchipuram were asked to rate the same by distributing a questionnaire form containing integrating ICT into teaching and learning method. The survey form contains the dimensions 1. Subject Content 2. Student-Teacher Relations 3 Integration of ICT into Teaching and learning and 4.the Student's behavioral approach in using the ICT.

Key words— Education, *Traditional Method, ICT*

1. INTRODUCTION

Traditional method of teaching and learning form of education is prevailing in India where teacher is active and the students are passive in nature. Students have to memorize the learning content and interpret them to the teacher when the questions were asked in the classroom situation. Teachers teach the unit / lesson in the class. At the end of the class, assignments were given to the students as homework. Students have to go through the books, understand the content, store them in the cognitive structure in the form of knowledge and prepare the answers given in the assignment. A test will be given at the end of the unit. A large number of initiatives have been made in the field of education to integrate information technology into traditional method of teaching and learning thus forming the technological roadmap towards Information and Communication Technology. Traditional mode of education is shifting itself towards new method of teaching and learning using ICT. The advancement in the field of technology have led a great distribution and diffusion of knowledge transfer. Knowledge is the primary source for improving the lives of the people, and the key for rapid development which lies in building a knowledge society. The penetration of information technology into 21st century which lead to nuclear power, space travel, computers, mobile phones and wireless internet. Countries like India is working a lot of initiatives to reuse the existing technologies to adopt e-learning and integrating ICT in to their education systems. Educational institutions in India are bringing a revolutionary change by using technology in terms of Internet Infrastructure and services, Curriculum Development, Teaching and learning and Administration. The purpose of the study is to analyze the integration of ICT in different branches for Deemed University Students.

2. LITERATURE REVIEW

A number of studies have been reported by the researchers in the field of teaching learning with ICT. Alcuin Mwalongo **[1]** explores the ideas on integrating ICT into traditional teaching and learning. The study examines ICT tools for teaching, administration, professional development. By using ICT for personal use, it throws more light on the students using ICT. The survey was conducted and focused on the major areas 1. Teacher's use of the computers.2. ICT Competence and 3. ICT Resources and final focus is on the impact of ICT, for teaching and the student's learning. Charles Buabeng-Andoh **[2]** throws the light on personal, institutional and technological factors that encourage teachers, the use of the computer technology in traditional teaching and learning process. The author highlights the prevention of ICT at the teacher-level, school-level and system-level. Barrier on the ICT skills, contends the lack of teacher confidence, lack of pedagogical teacher training, lack of educational software, limited access to ICT, structure of traditional educational systems and curriculum. Khalid Abdullah Bingimlas **[3]** explains the use of ICT in classroom environment, providing opportunities for students to learn in the information age. Lack of confidence, competence and access to the resources were found out. It is found that the confidence, competence and accessibility have been found as the critical components of technology which were integrated in schools. The use of ICT resources which includes hardware and software, an effective professional development, sufficient time, technical support need to be provided to the teachers. Generally this paper provides information and recommendations to those responsible for the integration of new technologies into education. Robert Douglas **[4]** gives an overview on ICT to be considered and to be introduced in schools. He highlights on the developments in technology, and particularly the rise in 'smart phones' and tablet-based technologies such as iPad has magnified the differences between the two and also have an impact on ICT infrastructure. GeSCI **[5]** thematic paper describes on ICT, Education, Development and Knowledge Society, Trends and Challenges and Issues, Countries responsiveness in ICT development, Policy Development, Bandwidth Considerations, Technology Applications. Jef Peerar et.al**[6]** developed a model which influences factors for the use of ICT for teaching practice which includes access to computers, ICT confidence, ICT skills, Attitudes towards ICT and describing about digital divide. Educational beliefs and attitudes towards ICT. Tan Luck Lee et.al**[7]** gave a description on technology enhanced learning along with traditional learning where the individuals would access the web by collecting learning materials. His objective is to determine the ways to achieve effective managerial and application perspectives of ICT in proposed teachers regional collaborative life-long learning centers for existing teachers in Malaysia. Bhandana Bhasin**[8]** describes on a framework for using ICT to transform education and also discusses on a unified model of integration of ICT into teaching and learning process. Sara Hennessy et.al **[9]** focus on internal factors of which influence teachers use, lack of technology in classroom environment and also express on ICT and their motivating effects, technological literacy and confidence levels, pedagogical expertise related to technology use, and the role of teacher education. Jef Peerar et.al**[10]** explores the constraint factors for the use of ICT in teaching practice. It highlights on barriers of access, confidence , skills, digital divide and also on attitudes towards ICT and educational beliefs and also analysis on statistical use of ICT for teaching practice scale and also explores on factors influencing the use of ICT for teaching practice and conclusions.

3. STATEMENT OF THE RESEARCH PROBLEM

The purpose of the study is to analyze the integration of ICT into traditional teaching and learning towards knowledge society

4. SIGNIFICANCE OF THE STUDY

Traditional teaching and learning methods are used in the classroom situations. Teachers have to self-efficacy themselves by using ICT. Improvements are made in ICT for teaching and learning methods. However teachers, students have to learn the use of ICT in classroom environment.

1. Traditional teaching and Learning and its limitations.
2. Integrating ICT into Teaching and Learning.
3. ICT literacy, Infrastructure, ICT Applications, Student behavioral factors in using ICT.

5. OBJECTIVES OF THE STUDY

The study was conducted to achieve the following objectives

1. To study the Subject Content coverage based on curricular aspects.
2. Student-Teacher Relations in classroom environment.
3. To study the integration of ICT with traditional teaching and learning process.
4. To understand the level of Student Behavior in using ICT

6. TRADITIONAL MODE OF TEACHING AND LEARNING.

In traditional mode of teaching and learning, the teacher is the sole authority in controlling the students in the classroom environment. The teacher teaches the lesson through talk and chalk where the students of different knowledge levels, were the receptor of information. They have to sit erect, minimize movements around the classroom and talk only when asked. Teacher is the only central figure and no ideas are coming from student's knowledge. Students are passive spectators who sit silent, when the teacher teaches the lessons. The teacher dictates the material and the students have to write in the notebook with pencil or pen and thus provide a supplementary material to the students. At the end of the lesson the teacher questions the students related to the topic / lesson and the student has to answer the questions only relating to the lecture. Assignments will be given to the students based on the topic / lesson. Students have to undergo the assignment by searching the printed materials given by the teacher or search the books in the library, gain knowledge, store them in the cognitive structure and reciprocate them in the paper and give the assignment before the deadline schedule. If the assignment is given after the deadline, punishment is given to the students. Practice test is given to the students at the end of each lesson / topic. After completion of the course the students has to undergo the examination.

Disadvantages

a) Form of Military Training

b) No creative or innovative thought process.

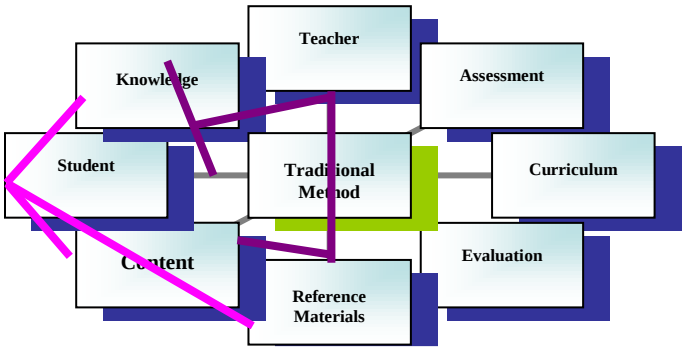

Fig-1: Traditional Method of Teaching and Learning

Teacher — Teacher develops knowledge by reading content and reference materials

Student — Student develops knowledge by reading reference books and by developing the content in the form of printed material

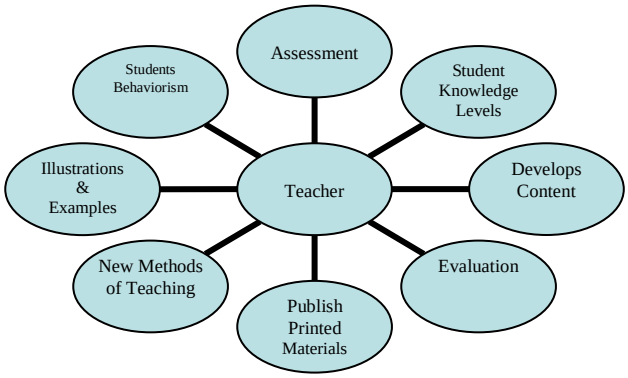

Fig-2: Teacher pedagogical activities to Students

6. 1 Teacher Pedagogical Activities to students in Traditional Method

Teacher is the sole authoritative person controlling the classroom environment. As shown in **Fig-2** Teacher develops the content by analyzing the books and reference materials and gives the final shape in the form of notes. Some teachers deliver the content to the students in the form of printed material. He / She discover new ideas in the method of teaching so as to enable the students to understand the topic / lesson. Teacher then and there illustrates with examples, pictures that are related to the topic / lesson. Behaviorism is followed in the classroom where students learn through stimuli and response where the teacher is the expert and students are the passive recipient. At the end of the lesson the student's knowledge is assessed through observable measures such as test, assignments and examinations. In behaviorist theory of learning, the learning goals must be divided into smaller components or tasks which the students can accomplish.

7 INTEGRATION WITH ICT IN TRADITIONAL TEACHING AND LEARNING.

The process of teaching and learning with the creation of knowledge is carried from the very first day in human history. As the body of knowledge grows bigger and bigger with varied dimensions, the process of teaching and learning becomes formal and systematic. Method of delivering the content is monolithic structure where the content cannot be broken down into smaller components and delivered to the students. Students innovative thought process and knowledge enrichment on the topic / lesson is limited in traditional education setup. Researchers, Academicians, Scientists started integrating ICT into traditional method of teaching and learning which has got enormous advantages. It is the time for the students and teachers to go beyond the traditional classroom setup to mingle with ICT to give a richer dimension in knowledge giving a beacon towards knowledge society.

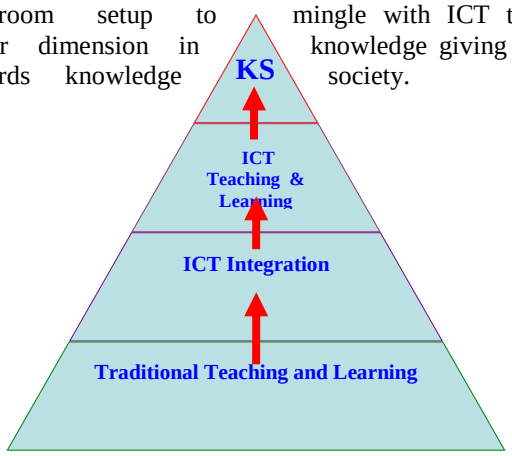

Fig-3Traditional to ICT towards Knowledge Society (KS)

In the traditional method of teaching and learning, exchange of information and knowledge is limited. The revolution of technology that allows people to create, transmit and receive information has opened a new age in the history of mankind. The drastic improvement in the technology has a significant impact on the education and its development towards knowledge society. In **Fig-3** traditional teaching and learning towards information and knowledge has a lesser impact towards knowledge society. By integrating ICT into traditional method of teaching and learning, it is playing a vital role in knowledge society as a source of basic skills, and also lays a foundation for the development of new knowledge and innovation for socio-economic development. Learning in knowledge based society is considered to be holistic, as it is a

lifelong activity and cuts across different learning generations. The potential impact of ICT in learning is the vision that it enables learning anywhere and anytime. In addition to it the knowledge based society with the widespread use of ICT generates a need for new digital skills and competencies for employment, education, training, self-development and participation towards knowledge society. ICT has a potential to widen the access to educational resources, improve the quality of learning and improve the management efficiencies of the educational system. ICT literacy is, the learning to operate the technology and also build higher-order skills such as knowledge and understanding to live with the digitized world of knowledge in networked society. There are some important ICT applications which guide the student to search and locate the information and also guide him, how to process and evaluate the information. It also deals with the educational content to access and assess the quality and reliability of content knowledge and to contextualize it effectively. ICT effectively build knowledge societies with the changing requirement of skills of teachers and students. Development of knowledge society lies with students and teachers who develop higher order of thinking skills, lifelong learning habits and the ability to think critically, communicate and collaborate and as well as to access, evaluate and synthesize information and knowledge. Integration with ICT and knowledge, benefits a strong association with improved service delivery, changes in curriculum in higher educational settings. The ICT (Information and Communication Technology) is the combination of hardware, software, media and delivery systems which can be integrated into multiple media and into single educational applications. ICT mediated instruction along with traditional method of teaching and learning methodology is as effective as face-to-face instruction. Using ICT in teaching and learning process will support accessing remote resources, enabling collaboration, educational programmes and information literacy. ICT has the potential to be used in support of new educational methods, enabling students to learn by demonstration. ICT can make it possible for the teachers to provide students with self-paced, self-directed problem-based or constructive learning experiences, as well as to test the student's learning in new, interactive and attractive ways that may be a better access to the depth of their understanding of content and process.

8. ICT INTEGRATION WITH TRADITIONAL METHOD OF TEACHING AND LEARNING

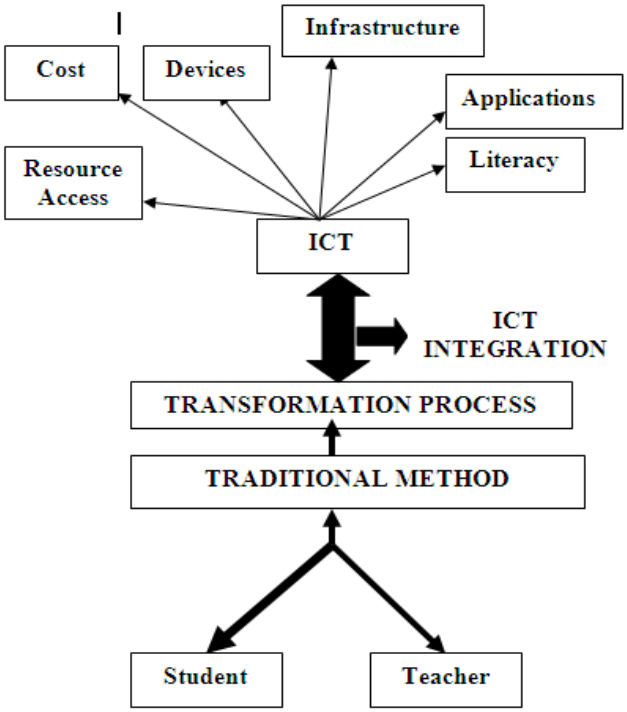

Fig-4: Integration of Traditional method to ICT mediated Teaching and Learning

The aim is to integrate traditional method through a transformation process with ICT integration which contains resource access, cost, devices, infrastructure, application and literacy which is shown in **Fig-4**. The penetration of ICT in traditional teaching and learning process is facing a significant challenge in preparing students and teachers towards knowledge society. ICT can integrate multiple media formats into single application. It is a flexible offering for the freedom from overcoming the barriers of learning through connectivity by retrieving millions of pages through internet towards knowledge based society. The connectivity of ICT enables the students to access digital library resources which are electronic books such as textbooks, journals, illustrations, maps, charts and graphs which are available in the internet. There are some educational websites which contains collection of high quality curriculum guides, lesson plans and instructional activities. ICT enables a rich educational collaboration between students, teachers, academicians with the help of ICT applications and ICT devices. ICT enables the students to access, collaborate and enrich the knowledge, removing the barriers of using virtual learning communities known as learning groups. It enables the sharing of knowledge and information to the students anywhere on the globe known as constructing constructivist learning activities by removing the barriers of time, geographical locations, age, ability, culture and social studies. There is some specialized educational software's, where in teachers can create internet based stimulations for the role-playing activities in learning. This specialized software is incorporated into ICT devices which contain simulations, email, chat and online creation and editing of documents which motivate students and participating groups, guiding them with scenarios with multi-lingual features. Learning content can be accessed through

ICT devices such as desktops, laptops, Tablet PC's, Net books, Tablets, Smart phones and Smart Devices. Infrastructure development can be through modems, telephone lines, networks and routers. The teachers and the students explore the educational world beyond their immediate reach, such as perusing the card catalogue at the local library for a list of books on a research topic, sharing weather data with scientists on a network, collaborating and gathering educational information with academicians, researchers on the globe.

9. FACTORS INFLUENCING TECHNOLOGY USE BY TEACHERS AND STUDENTS

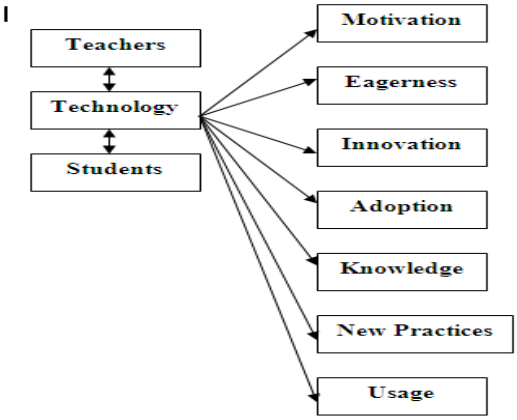

Fig-5 Factors influencing technology by Teachers and Students

Traditional methods of teaching and learning are not significantly influenced by technology. Technology is not influenced by teachers and students. Access to information resources via telecommunication technology is limited. Beyond this, the access to the computers is limited. It is now necessary for the teachers and students to make user-friendly hardware and software. Time is the important, to learn how to use a particular piece of software to accomplish work-related goals. Majority of the time is required for the teachers to actual instruction which leaves very little time for planning, preparation and learning new things related to computer education. Even accomplished teachers, who are highly motivated, rated the lack of time as one among the most problematic barriers to use technology in classroom environment. Some teachers express eagerness to experiment new ideas, even at the risk of failure, while other teachers say that they have very little interest, energy and time for experimenting the computer technology. Even the most energetic and innovate teachers, experience in many competitive environments to learn new things using computers in curriculum development, teaching methodology, behavior management techniques and assessment methods. Teachers who use the technology also may find it difficult to educate themselves enough to use a particular piece of hardware or software that can require considerable amounts of extra time and effort to learn. Teachers may also, need more knowledge about how to organize and effectively manage their students in technology based environments. The barrier between teachers and technology training for teachers has competing priorities for limited staff development time. This makes the technology training difficult. The kind of technology training provided is, as important to teachers as the availability of training. Some teachers observe that the content of training they receive is inadequate. There seems to be a focus on basic training in the mechanics of operating the computing machines. Very little training is required about integrating technology into various subjects or learning to use it as a pedagogical tool. Another observation is that the teachers have limited technical focus in computers, in the colleges and universities. Another observational study is that teachers were poor in training with the restricted focus. Teachers tend to be critical of the fact that the training often focused primarily on issues such as, how to operate the computer without giving them much advice or assistance with two fundamental issues such as what software's were available to assist them in accomplishing their educational objectives and how to organize the class to make the efficient and effective use of student's time when there were a small number of computers in the classroom. Poorly timed or piecemeal training is also a problem. Sometimes training is provided before the hardware or software arrives or before teachers know what equipment they will be using.

10. FINDINGS AND DISCUSSION

Table1: Demographic Profile

Category	Items	Number of Respondents	Percentage
Gender	Male	59	57.3
	Female	44	42.7
Educational Qualifications	B.E	36	35.0
	B.Tech	14	13.6
	B.C.A	5	4.9
	MCA(Integrated)	30	29.1
	MCA	18	17.5
Branch	C.S.E	36	35.0
	I.T	14	13.6
	CSA	53	51.5
Year	Ist Year	27	26.2
	IInd Year	18	17.5
	IIIrd Year	58	56.3

Source: Primary Data

Description

It has been observed from the table that demographic profile which is expressed under different categories such as Gender, Educational Qualification, Branch and Year. There are 59 (51.3%) are males and 44 (42.7%) are females. Students with educational qualification are categorized in to different branches B.E 36(35.0%), B.Tech 14 (13.6%), B.C.A 5 (4.9%), MCA (Integrated) 30 (29.1%) and MCA 18 (17.5%). Engineering Branches is sub-divided into Computer Science Engineering (CSE) 36 (35.0%), Information Technology (IT) 14 (13.6%), Computer Science and Applications (CSA) 53 (51.5%). Year of Education is being treated as Ist Year 27 (26.2%), IInd Year 18 (17.5%) and IIIrd Year 58 (56.3%).

Hypothesis

H1: There is no significant difference between ICT integration into Teaching and Learning process based on Branch

H2: There is no significant difference between Student Behavior in Using ICT based on Branch

Table 2 :ANOVA

ICT Integration into Teaching and Learning

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.558	2	.779	4.192	.018
Within Groups	18.402	99	.186		
Total	19.961	101			

Source: Primary Data

Table 3: ICT Integration into Teaching and Learning

Branch	N	Subset for alpha = 0.05	
		1	2
I.T	14	4.2143	
C.S.E	35	4.2686	4.2686
CSA	53		4.4981
Sig.		.656	.062

Source: Primary Data

Description:

The table-2 clearly indicates that tabulated value is less than 0.05, hence H1 is rejected. From the table 3, it was observed that CSA student's perception of ICT integration into teaching and learning is more when compared to other branches by applying Duncan Post Hoc Test.

Table 4: ANOVA

Student Behavior in Using ICT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.312	2	2.156	11.176	.001
Within Groups	19.099	99	.193		
Total	23.412	101			

Source: Primary Data

Description:

From the table 4, clearly indicates that tabulated value is less than 0.05, hence H2 is rejected. From the table 5, it was observed that CSA student's behavior in using ICT is more when compared to other branches by applying Duncan Post Hoc Test.

Table-5 Student's behavior in using ICT

Branch	N	Subset for alpha = 0.05	
		1	2
I.T	14	4.0286	
C.S.E	35	4.0686	
CSA	53		4.4679
Sig.		.747	1.000

Source: Primary Data

11. CONCLUSION

Technologies have great potential for knowledge dissemination, effective learning, and efficient education services. Yet, if the educational policies and strategies are not right, and if the prerequisite conditions for using these technologies are not met concurrently, this potential will not be realized. The strong belief is that the potential of technology, market push, and enthusiasm for introducing technology into universities and colleges, creates the temptation to implement them immediately in full scale. Integrating technologies into education is a very sophisticated, multifaceted process just like any other innovation and it should not be introduced without piloting its different components on a smaller scale. Even the technologies we are sure about need to be piloted in new contexts. No matter how well an ICT project is designed and planned as, many aspects need to be tested on a small scale first. Among these aspects, there are appropriate technologies, which are suitable for instructional materials, production process, and classroom implications, learning effectiveness and cost-benefit ratio. The challenge to integrate ICTs, into education is enormous, but so are the potential benefits. With the advances in technology, the sky is the limit, but with educational technologies, the sky is not the limit. The limit is human imagination and societal creativity. The required competence and technology, penetrates the minds of the teachers and the students to structure the classroom activities so that the students work in the small groups towards knowledge society. Technology allows teachers to train in technology, which is flexible enough to organize the time to meet the individual student's needs. There are some situations wherein the teachers used the technology as a tool for setting up activities where in the students work in teams and roles. The members of the team are designed to draw up their personal strengths and interests to help themselves to find the areas where they can succeed and develop self confidence.

12. SCOPE OF FURTHER WORK

Below are some of the ideas and recommendations regarding Integration of ICT with traditional teaching and learning methods.

1. To improve the computing and network infrastructure facilities with regards to teaching and learning activities.
2. The use of technology by the teachers, to the maximum extent so that it can supplement the pedagogical methods effectively
3. Teachers to take the role of programmers in developing ICT applications for their universities and colleges.
4. Students must have an inclination to use the technology to the fullest extent where the information and knowledge exchange can be fully utilized towards knowledge society.

13. REFERENCES

[1] Alucin Mwalongo(2011) , Teachers perceptions about ICT for teaching, professional development, administration and personal use, International Journal of Education and development using Information and Communication Technology (IJEDICT), 2011, Vol.7, Issue 3, pp 36-39.

[2] Charles Buabeng-Andoh(2012), Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature, International Journal of Education and Development using Information and Communication Technology (IJEDICT), 2012, Vol.8, Issue.1, pp 136-155.

[3]Khalid Abdullah Bingimlas(2009), Barriers to the successful integration of ICT in teaching and learning environments: A review of literature, Eurasia Journal of Mathematics, Science & Technology Education, Vol.5 , Issue 3, pp 235-245.

[4]Robert Douglas(2011), ICT for teaching and ICT for learning: They are not the same, Computers in New Zealand schools, Vol.23, No.2.

[5]Gesci(2011), ICT, Education, Development, and the Knowledge Society, Gesci, African Leadership in ICT program.

[6] Jef Peerar, Peter Van Petegam(2010), Factors Influencing Integration of ICT in Higher Education in Vietnam, Global Learn Asia Pacific conference in penang(Malaysia)

[7] Tan Luck, Lee, Hua Jie, Lee, Collaborative Regional Public Technology Enhanced Learning Management System (TELMS) in Promoting School Teachers' Lifelong Learning through School ICT Laboratories: Upgrading Knowledge and Human Capital in Malaysia, Formal education- Technologies for scaling up ODL program.

[8] Bandhana Bhasin(2012), Integration of Information and Communication Technologies in Enhancing Teaching and Learning, Contemporary Educational Technology, Vol 3, Issue 2,pp 130-140.

[9]Sara Hennessy et.al(2010), Teachers factors influencing classroom use of ICT in Sub-Sahara Africa, Itupale Online Journal of African Studies, ISSN: 2043-6165, Vol.2, pp 39-54.

[10] Jef Perrar et.al, How to address integration of ICT in teaching practice? Research on factors influencing the use of ICT in education.

[11] Parveen Pannu, Yukti Azaad Tomar(2010), ICT4D, Information and Communication Technology for Development, L.K. International Publishing House Private Limited, New Delhi, ISBN:978-93-80578-09-5